

### REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 1, 3-7, and 9-15 are pending. Claims 5, 6, and 11-15 are withdrawn.

In the outstanding Office Action, Claims 1 and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ueda (U.S. Pat. No. 6,719,876) in view of Lohmeyer (U.S. Publication No. 2002/0127764) or Kaschmitter (U.S. Patent No. 5,456,763); Claims 3 and 9 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ueda in view of Lohmeyer or Kaschmitter, and further in view of Takagi (U.S. Publication No. 2004/0020432); Claims 4 and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ueda in view of Lohmeyer or Kaschmitter, and further in view of Gillery (U.S. Patent No. 3,907,660); Claims 4 and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ueda in view of Lohmeyer or Kaschmitter, and further in view of Nomura (U.S. Patent No. 5,993,614); and Claims 1 and 7 were, in the alternative, rejected under 35 U.S.C. sc1 103(a) as unpatentable over Ueda in view of Sugiyama (U.S. Publication No. 2002/0022349) and Lohmeyer as additionally evidenced by Doehler (U.S. Patent No. 4,664,951), Saito (U.S. Patent No. 4,801,474), and Sharp (U.S. Patent No. 5,082,696).

Turning now to the rejections under 35 U.S.C. § 103(a), Applicants respectfully request reconsideration of these rejections and traverse these rejections, as discussed below.

1. “Substantially similar”

Applicants note that during a telephone discussion with Examiner Miller on April 19, 2010, Examiner Miller admitted that he overlooked Applicants’ amendments to Claim 1 in the Amendment filed on December 10, 2009, replacing the term “substantially similar” with “substantially equal.” Despite Examiner Miller acknowledging his error, Examiner Miller refused to issue Supplemental Office Action to correct the rejections made in the Office

Action with respect to the term “substantially similar” (see, for example, page 3, bottom paragraph and page 8, bottom paragraph). The present response constitutes Applicants’ statement of substance of the telephonic interview.

Applicants respectfully submit that Claims 1 and 7 of the amendment filed December 10, 2009, recite, in part, “installing a plurality of substrates on both sides of and in parallel to said array antennas so as to have respective distances between the array antennas and the substrates substantially equal to the intervals” (emphasis added). Each of the rejections and the alternative grounds for rejection on page 4 of the Office Action relate to the aforementioned misreading of the claimed term “substantially equal.” It is respectfully submitted that if the claimed term is properly read and interpreted, all the rejections would be overcome.

The Office Action at the bottom paragraph of page 3 and also at the bottom of page 8 asserts that Ueda teaches “multiple substrates arranged between multiple layers of the electrode (i.e. antenna) arrays” and that “Ueda teaches that the electrodes are formed with the same L2...and depicts (Fig. 5) substrates that are spaced evenly.” However, even if Ueda teaches evenly spaced antennas and evenly spaced substrates, Ueda still does not disclose “distances between the array antennas and the substrates substantially equal to the intervals [between the first and second linear conductors],” as recited in Claims 1 and 7. The Office Action fails to show any rationale for asserting why it would have been obvious for Ueda to teach the claimed equal distances simply because Ueda teaches that other distances may be equal. The Office Action merely states on page 4 that “it would be obvious to carry over this same principal...therefore it would be obvious for the distances/spaces named to be comparable.” However, according to MPEP §2141.02 (II), “[d]istilling an invention down to the ‘gist’ or ‘thrust’ of an invention disregards the requirement of analyzing the subject

matter ‘as a whole.’” See *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

## 2. Improper rationale

Claims 1 and 7 of the amendment filed December 10, 2009 recite, in part, “forming thin films on said substrates, wherein the films have at least a microcrystalline structure.”

The Office Action on the middle of page 4 and on the middle of page 9 asserts that Lohmeyer teaches converting an amorphous silicon layer into a microcrystalline layer and that Kaschmitter teaches forming microcrystalline films from amorphous silicon films. The Office Action combines these teachings with Ueda to reject Claims 1 and 7. Further, according to the alternative grounds for rejection on page 9 of the Office Action, Sugiyama and Lohmeyer are cited to teach deposition of an amorphous film. More specifically, both of these rejection reasons are based on either Lohmeyer or Kaschmitter.

It is respectfully asserted that the teachings of Lohmeyer and Kaschmitter are not pertinent to the claimed invention because Claims 1 and 7 do not recite both converting an amorphous silicon layer into microcrystalline one and forming microcrystalline films from amorphous silicon films.

## 3. Unexpected results

Further, it is respectfully submitted that Claims 1 and 7 of the amendment filed on December 10, 2009, commonly recite the limitations of “installing a plurality of substrates on both sides of and in parallel to said array antennas so as to have respective distances between the array antennas and the substrates substantially equal to the intervals” and “forming thin films on said substrates, wherein the films have at least a microcrystalline structure.”

The rejections under 35 U.S.C. § 103(a) are further rebutted by submitting the following evidence that the claimed invention yields **unexpected results**.

The thin films formed by this process, without any conversion process, contain at least microcrystalline silicon and may further contain amorphous silicon. Further, it is noted that a non-limiting example of the claimed invention provides controllability of a ratio of microcrystalline silicon to amorphous silicon. Please see Applicants' specification at page 8, lines 10-12 and the paragraph at page 8, line 26, for example. The existence of microcrystalline silicon and its ratio critically influence the property of the obtained silicon film. Therefore, controllability of them resulted from the claimed invention provides improved properties.

In contrast, the cited references fail to teach as-formed films containing microcrystalline silicon. Lohmeyer and Kaschmitter contrarily teach that conversion from amorphous silicon is necessary to obtain microcrystalline silicon. More specifically, the aforementioned improved properties provided by the claimed invention cannot be expected from the cited art.

#### 4. The interpretation of the terms "amorphous" and "microcrystalline"

The Office Action on page 10 indicates that "it is not clear the limitations included in such a statement of an amorphous film." Accordingly, Applicants hereby provide comments on this issue.

Extrinsic records in the art may reveal that some persons use definitions inconsistent with the definition intended by the inventors of the present application. In accordance with the Office Action, Doehler's definition of amorphous materials may include somewhat crystalline portions, Saitoh's definition of an amorphous film may include microcrystalline matter, and Sharp's definition of amorphous may include both non- and microcrystalline materials. It is respectfully submitted that these references do not recognize a clear distinction between microcrystalline silicon and amorphous silicon. However, the teachings of these references, the inventors of the present application, and persons of ordinary skill in

the art share a common opinion in that polycrystalline silicon is distinguished from microcrystalline silicon.

In the art field of solar cells of silicon to which the present invention pertains, the existence of microcrystalline silicon involved in amorphous silicon has been recognized as a critical factor in view of efficiency of solar cells. Its ratio has been also recognized as critical. The "BACKGROUND ART" section of the specification of the present application, for example, describes such a situation. In this view, the originally-filed specification consistently treats microcrystalline silicon as a phase distinct from amorphous silicon.

As discussed above, definitions may be inconsistent among the cited references. However, this is not pertinent to a question of whether the Ueda's film contains microcrystalline silicon or not. It is respectfully submitted that a rejection must be established on the basis of fact. In accordance with a proper interpretation, Ueda fails to teach a film including microcrystalline silicon that meets the claimed subject, much less controllability of a ratio of microcrystalline silicon to amorphous silicon. In contrast, the claimed invention provides production of microcrystalline silicon and controllability of its ratio.

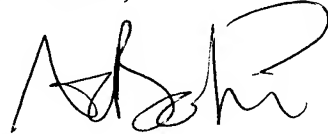
Accordingly, it is respectfully requested that the rejection of Claims 1 and 7 be withdrawn.

Consequently, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. A Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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